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EXAMINER

KUMAR, PANKAJ

ART UNIT PAPER NUMBER

2631

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,513

Applicant(s)

NILSSON ET AL.

Examiner

Pankaj Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-11 is/are rejected.
- 7) ☒ Claim(s) 6-8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed regarding the claims have been fully considered but they are not persuasive.
2. As per the IDS of 3/2003, the PCT international search report has been considered.
3. Applicant argues that Strolle does not teach determining the gain offset based on the first and second sets of channel estimates since Strolle does not use channel estimate to determine gain since it is using power estimator to determine gain. This is not persuasive since power estimator is estimating the channel. When signals go through a channel, there is power in the channel. So a power estimate is an estimate of the channel.
4. Applicant argues that it is only after gains are measured in Strolle that Strolle is able to determine the estimates of the two signal paths. This is not persuasive. As is clearly shown in Strolle fig. 4, power estimations are performed in 402, 412 prior to gains being determined.
5. Applicant argues that “power estimator 402 and gain A comprise estimates of channel A’ and that ‘power estimator 412 and gain B comprise estimates of channel B’ ... have no technical merit”. This is not persuasive. Power estimator 402 and 412 are technical. Gains A and B are technical. The Strolle patent has merit. Power estimators have merit. Gains have merit. They all have technical merit and not only has applicant failed to prove otherwise, applicant’s statement is counterproductive to the patent system.
6. Applicant argues that channel estimates must be calculated and hence channel estimates do not determine gain. This is not persuasive since power estimation is an estimation of the channel. This estimation is used to determine the gains in Strolle fig. 4.

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7. Applicant argues that Choi and Dufour do not teach certain limitations. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 4, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle USPN 6,560,299 (if this is not sufficient then Strolle in view of Lindbom USPN 5,581,580).

10. As per claim 1: A method of determining a gain offset between transmission channels (Strolle fig. 4: tuners a and b tuning to television transmission channels; col. 1 lines 10-25; col. 2 line 5: "diversity receiver has a plurality of receive channels") in a communication system (Strolle col. 1 lines 6-25: television broadcasting and receiving), comprising the steps of: deriving a first set of channel estimates (Strolle fig. 4: power estimator 402 and gain a comprise estimates of channel a) from symbols received through a first channel (Strolle fig. 4: tuner output a); deriving a second set of channel estimates (Strolle fig. 4: power estimator 412 and gain b comprise estimates of channel b) from symbols received through a second channel (Strolle fig. 4: tuner output b); determining the gain offset based on the first and second sets of channel

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estimates (Strolle fig. 4: 420; col. 8 line 63 to col. 9 line 18; col. 9 lines 12-14: gain difference between channel a and channel b; error integration to form gain).

11. Strolle does not teach that the data received into 402 and 412 are symbols. Strolle does teach symbols being transmitted in col. 1 lines 15-18. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with symbols as recited by the instant claims, being the data into 402 and 412 because Strolle suggests transmitting symbols and in order to be efficient, a system would be designed to transmit something that a receiver is going to be able to receive in the analogous art of communication system.

12. If Strolle's channel estimate and symbols are not sufficient, then Lindbom teaches channel estimates (Lindbom fig. 1: 16, 18) and symbols (Lindbom col. 3 line 23, 61). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimate and symbols as recited by the instant claims, because the combined teaching of Strolle with Lindbom suggest channel estimate and symbols as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Lindbom because Strolle suggests estimation and data (something broad) in general and Lindbom suggests the beneficial use of channel estimation and symbols such as to adjust the gain in fading channels in the analogous art of communication.

13. As per claim 4: A method of determining a set of complex channel estimates for a transmission channel in a communication system, comprising the steps of: deriving a first set of channel estimates (Strolle fig. 4: power estimator 402 and gain a comprise estimates of channel a) from symbols received through the transmission channel (Strolle fig. 4: tuner output a is

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through the transmission channel); deriving a second set of channel estimates (Strolle fig. 4: power estimator 412 and gain b comprise estimates of channel b) from symbols received through a second channel in the communication system (Strolle fig. 4: tuner output b is through a communication system); determining a gain offset based on the first and second sets of channel estimates (Strolle fig. 4: 420; col. 8 line 63 to col. 9 line 18; col. 9 lines 12-14: gain difference between channel a and channel b; error integration to form gain); and determining the set of complex channel estimates (Strolle fig. 9a: output of 910) based on the gain offset and the first and second sets of channel estimates (Strolle: fig. 9a is part of fig. 7 which is part of fig. 1 element 22 which is after fig. 1 element 16 which is fig. 4 which is an AGC loop).

14. Strolle does not teach that the data received into 402 and 412 are symbols. Strolle does teach symbols being transmitted in col. 1 lines 15-18. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with symbols as recited by the instant claims, being the data into 402 and 412 because Strolle suggests transmitting symbols and in order to be efficient, a system would be designed to transmit something that a receiver is going to be able to receive in the analogous art of communication system.

15. If Strolle's channel estimate and symbols are not sufficient, then Lindbom teaches channel estimates (Lindbom fig. 1: 16, 18) and symbols (Lindbom col. 3 line 23, 61). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimate and symbols as recited by the instant claims, because the combined teaching of Strolle with Lindbom suggest channel estimate and symbols as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to

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combine the teachings of Strolle with Lindbom because Strolle suggests estimation and data (something broad) in general and Lindbom suggests the beneficial use of channel estimation and symbols such as to adjust the gain in fading channels in the analogous art of communication.

16. As per claim 9: A method of determining a set of channel estimate gains for a transmission channel in a communication system, comprising the steps of: deriving a first set of channel estimates (Strolle fig. 4: comprising the estimates of channel a include power estimator 402, gain a; fig. 7: 712 a, b) from symbols received through the transmission channel (Strolle fig. 4: tuner output a is through the transmission channel); deriving a second set of channel estimates (Strolle fig. 4: comprising the estimates of channel b include power estimator 412, gain b; fig. 7: 712 a, b) from symbols received through a second channel in the communication system (Strolle fig. 4: tuner output b is through a communication system); determining a gain offset based on the first and second sets of channel estimates (Strolle fig. 4: 420; col. 9 lines 12-14: gain difference between channel a and channel b); determining a set of channel estimate gains (Strolle fig. 4: outputs of 430, 432 are estimates of gains as incorporated by the signals that control the amount of gain RF AGC A, IF AGC A, RF AGC B, IF AGC, B) based on the gain offset and the first and second sets of channel estimates (Strolle fig. 4: outputs of 430, 432 are based on 420, power estimators a, b and gains a, b); and associating the set of channel estimate gains (Strolle fig. 4: outputs of 430, 432) with channel estimate phases (Strolle fig. 7: 712a, b are phase detectors which are associated with fig. 4 outputs of 430, 432 as taught in fig. 1 with fig. 7 being after fig. 4) of one of the first and second sets of channel estimates (Strolle fig. 7 phase detectors are based on fig. 4: power estimators 402, 412, gains a, b as taught in fig. 1 with fig. 7 being after fig. 4).

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17. Strolle does not teach that the data received into 402 and 412 are symbols. Strolle does teach symbols being transmitted in col. 1 lines 15-18. Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with symbols as recited by the instant claims, being the data into 402 and 412 because Strolle suggests transmitting symbols and in order to be efficient, a system would be designed to transmit something that a receiver is going to be able to receive in the analogous art of communication system.

18. If Strolle's channel estimate and symbols are not sufficient, then Lindbom teaches channel estimates (Lindbom fig. 1: 16, 18) and symbols (Lindbom col. 3 line 23, 61). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the channel estimate and symbols as recited by the instant claims, because the combined teaching of Strolle with Lindbom suggest channel estimate and symbols as indicated by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Lindbom because Strolle suggests estimation and data (something broad) in general and Lindbom suggests the beneficial use of channel estimation and symbols such as to adjust the gain in fading channels in the analogous art of communication.

19. As per claim 10: The method of claim 9, wherein the associated channel estimate phase (Strolle fig. 7: 712 a, b) is the one of the first and second sets of channel estimates (Strolle fig. 7: 712 a, b are part of the sets of channel estimates) being from a high-power channel (not in Strolle but would be obvious).

20. Strolle teaches channel but does not teach high-power channel in the fig. 7 embodiment. However, Strolle does teach high power channel in col. 9 lines 25-26. Thus, it would have been

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obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with high power channel as recited by the instant claims, because Strolle suggests transmission and reception and in order for the TV receiver to receive many miles away from the transmitter, the transmitter has to be high power in the analogous art of communication systems.

21. Claims 2, 3, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle USPN 6560299 in view of Choi USPN 6754473 (and in view of Lindborn if needed).

22. As per claim 2: The method of claim 1 wherein the first and second channels are pilot channels. Strolle does not teach pilot channels. Choi teaches pilot channels (Choi fig. 1: 101, 111; col. 2 lines 15-20). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the pilot channels as recited by the instant claims, because the combined teaching of Strolle with Choi suggest pilot channels as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Choi because Strolle suggests data (something broad) in general and Choi suggests the beneficial use of data being pilot channels (such as pilot channels being all 1's (Choi col. 2 line 21) and then scrambling pilot channels in order to indicate the base station (Choi col. 2 lines 18-35) so that the receiver can know the strength from each base station and adjust weights accordingly (Choi col. 1 lines 47-52) for better reception) in the analogous art of communication system and diversity reception.

23. As per claim 3: The method of claim 1, wherein the first and second channels are a DPCH and CPICH, respectively. Strolle does not teach that the channels are DPCH and CPICH. Choi teaches that the channels are DPCH and CPICH (Choi col. 2 lines 10-15: CPICH; col. 15

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lines 4-17: recovering CPICH in one line or channel and DPCH in another line or channel in conjunction with fig. 10: 1003, 1005, 1007). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the DPCH and CPICH as recited by the instant claims, because the combined teaching of Strolle with Choi suggest DPCH and CPICH as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Choi because Strolle suggests channels (something broad) in general and Choi suggests the beneficial use of channels being DPCH and CPICH (such as using the DPCH as a paging channel (as DPCH stands for data paging channel) in order to page an end unit in order to verify the possibility of communication and using the CPICH as a channel estimator (Choi col. 15 lines 18-30))) in the analogous art of communication system.

24. As per claim 11: The method of claim 10, wherein the associated channel estimate phase (Strolle fig. 7: 712 a, b) is the one of the first and second sets of channel estimates (Strolle fig. 7: 712 a, b are part of the sets of channel estimates) being from a DPCH channel (not in Strolle but would be obvious).

25. Strolle does not teach DPCH channel. Choi teaches DPCH channel (Choi col. 15 lines 4-17: recovering DPCH in a channel in conjunction with fig. 10: 1007). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the DPCH as recited by the instant claims, because the combined teaching of Strolle with Choi suggest DPCH as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Strolle with Choi because Strolle suggests channels (something broad) in general and Choi suggests the beneficial use of channels being DPCH (such

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as using the DPCH as a paging channel (as DPCH stands for data paging channel) in order to page an end unit in order to verify the possibility of communication) in the analogous art of communication system.

26. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle USPN 6560299 in view of Dufour USPN 6700537 (and in view of Lindbom if needed).

27. As per claim 5: The method of claim 4, wherein the gain offset is determined using a second-order equation. Strolle does not teach that the gain offset uses a second order equation but Dufour does teach that the variance which is proportional to the square of the difference in gain (Dufour col. 10 line 59 to col. 11 line 4: variance being the square of the standard deviation which is based on the gain difference) and hence variance is a second order equation which is used to determine whether the gain difference calculated is an acceptable value (Dufour col. 11 lines 1-2). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to modify the prior art teaching of Strolle with Dufour's teaching of the gain offset is determined using a second order equation as recited by the instant claims, because Dufour suggests knowing whether the calculation is an acceptable value in the analogous art of determining the gain offset.

Allowable Subject Matter

28. Claims 6-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

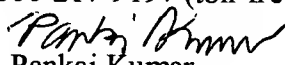
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Pankaj Kumar
Patent Examiner
Art Unit 2631

PK